We claim:

1. A wavelength selective manipulation device comprising:

at least a first optical input port for inputting an optical signal including a plurality of wavelength channels;

a first wavelength dispersion element for angularly dispersing the wavelength channels of said optical signal into angularly dispersed wavelength signals;

an optical power element for focussing in the dimension of the angular dispersion said angularly dispersed wavelength signals into a series of elongated spatially separated wavelengths bands;

a spatial manipulation element for selectively spatially manipulating the characteristics of said spatially separated wavelength bands to produce spatially manipulated wavelength bands.

2. A device as claimed in claim 1 further comprising:

a first wavelength combining element for selectively combining said spatially manipulated wavelength bands together to produce a first output signal.

3. A device as claimed in claim 1 wherein said first wavelength dispersion element includes a diffraction grating.

4. A device as claimed in claim 1 wherein said focussing element includes at least one cylindrical lens.

5. A device as claimed in claim 1 wherein said spatial manipulation element comprises a spatial light modulator or liquid crystal display device.

6. A device as claimed in claim 5 wherein said liquid crystal display device is divided into a series elongated cell regions substantially matching said elongated spatially separated wavelength bands.

7. A device as claimed in claim 6 wherein said cell regions each include a plurality of drivable cells and wherein, in use, said cells are driven so as to provide a selective driving structure which projects a corresponding optical signal falling on the cell region substantially into one of a series of output order modes.

8. A device as claimed in claim 1 wherein said optical power element also includes a spherical mirror device.

9. A device as claimed in claim 3 wherein said diffraction grating is utilised substantially at the Littrow condition.

10. A device as claimed in claim 4 wherein said optical power element includes a spherical mirror.

11. A device as claimed in claim 1 wherein:

when said spatial manipulation element is in a first state, first predetermined wavelengths input at said first optical input port are output at a first output port; and

when said spatial manipulation element is in a second state, second predetermined wavelengths input at said first optical input port are output at a second output port

12. A device as claimed in claim 11 wherein:

when said spatial manipulation element is in said first state, first predetermined wavelengths input at a third optical input port are output at a fourth output port; and

when said spatial manipulation element is in a second state, first predetermined wavelengths input at said third optical input port are output at said first output port.

13. A wavelength selective manipulation device comprising:

a series of optical input and output ports including a first optical input port inputting an optical signal including a plurality of wavelength channels;

a first wavelength dispersion element for angularly dispersing the wavelength channels of said optical signal into angularly dispersed wavelength signals;

an optical power for focussing said angularly separated wavelength signals into a series of elongated spatially separated wavelengths bands;

a spatial manipulation element for selectively spatially manipulating the characteristics of said angularly separated wavelength bands to produce spatially manipulated wavelength bands; and

said spatially manipulated wavelength bands being subsequently focused by said optical power element and combined in a spatially selective manner by said first wavelength separation element for output at said output ports in a spatially selective manner.

14. A method of providing wavelength selective separation capabilities for an optical input signal having multiple wavelength components, the method comprising the steps of:

(a) projecting the optical input signal against a grating structure so as to angularly separate said wavelength components;

(b) focussing each of said wavelength components into an elongated wavelength component element;

(c) independently manipulating said elongated wavelength component element;

(d) combining predetermined ones of said manipulated elongated wavelength components.

15. A method as claimed in claim 14 wherein said focussing step includes utilising a cylindrical lens to focus the wavelength components.

16. A method as claimed in claim 14 wherein said focussing step includes utilising a spherical mirror to focus the wavelength components.

17. A method as claimed in claim 14 wherein said step (c) includes utilising a liquid crystal display device to separately manipulate each of the wavelength components.

18. A method as claimed in claim 17 wherein said liquid crystal display device is divided into a series elongated cell regions substantially matching said elongated wavelength components.

19. A method as claimed in claim 18 wherein said cell regions each include a plurality of drivable cells and wherein, in use, said cells are driven so as to provide a selective driving structure which projects a corresponding optical signal falling on the cell region substantially into one of a series of output order modes.

20. A method as claimed in claim 14 wherein said focussing step includes utilising a spherical mirror.

21. A wavelength selective manipulation device comprising:

at least a first optical input port for inputting an optical signal including a plurality of wavelength channels;

polarisation alignment element for aligning the polarisation state of said optical signal;

a wavelength dispersion element for angularly dispersing the wavelength channels of said optical signal into angularly dispersed wavelength signals;

an optical power element for focussing the angularly dispersed wavelength signals into a series of elongated spatially separated wavelengths bands;

a spatial manipulation element for selectively spatially manipulating the characteristics of said spatially separated wavelength bands to produce spatially manipulated wavelength bands.